

# ***Headquarters U.S. Air Force***

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*Integrity - Service - Excellence*

## **B-52 Re-Engine Briefing**



**SAF/AQ-OTI  
Aug 2015**

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**This Briefing Is UNCLASSIFIED//FOUO**



# *Bottom-Line Up Front*

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- **Broad Congressional and AF interest in identifying pathways to use third party funding (e.g. energy savings performance contracts) to upgrade aging fleet**
- **SAF/AQ Office of Transformational Innovation (OTI) tasked by CSAF, SAF/AQ, and SAF/IE to explore options for re-engining B-52 fleet**
- **OTI collaborating with SAF/IE, PEO FB, AFGSC, and others to build consensus around affirmative conditions under four scenarios**
  - **Status Quo, Direct Procurement, Energy Savings Performance Contract (ESPC), and Commercial Leasing**
  - **Considering integration and acquisition costs and schedules**
- **Evaluating cost/benefit considerations for re-engining vice status quo**
  - **13 studies identified since 1996 with varying parameters and conclusions**
  - **PEO/FB conducting BCA (ECD Sep 15), OSD/CAPE prepping to conduct study**

**Delivering COAs to CSAF and other senior leaders NLT 31 Dec 2015**



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# Overview

- **Problem Statement & Project Scope**
- **Cost/Benefit Considerations**
- **Prior & Current Analyses**
  - **Identifying & Resolving Discrepancies**
- **Acquisition Considerations**
  - **Energy Savings Performance Contracts**
  - **Commercial Leasing**
- **Path Forward**





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# ***Problem Statement***

- **B-52 has utilized the same engines since the 1960's**
  - **Inefficient and limited capability relative to modern commercially-available engines**
  - **Costly and manpower intensive to maintain**
  - **Facing obsolescence of parts**
- **Persistent austerity necessitates exploration of novel acquisition strategies to mitigate upfront cost**
  - **FY16 NDAA directs OSD/CAPE to conduct cost benefit analysis of using ESPC specifically examining its use on the B-52**
  - **OTI investigating other options, AFPEO completing BCA summer '15**
- **Numerous conflicting analyses since 1996**
- **Current projections keep B-52 fleet operational through at least 2040 with potential for much longer**
- **B-52 effort to be documented for applicability to other platforms**



# *Project Scope*

- **Define conditions for an affirmative path forward**
- **Arbitrate discrepancies between prior analyses**
  - **Support ongoing analyses (SPO & CAPE)**
  - **Minimally address fuel, sustainment, and manpower costs**
- **Identify acquisition pathways for pre- and post- re-engineing activities**
  - **Consider direct procurement, Energy Savings Performance Contracts (ESPCs), and Commercial Leasing**
- **Define at least four COAs for senior leader review**
  - **Address financial, operational, and political factors**
  - **Include status quo for comparison**



# *Cost/Benefit Considerations*

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- **Operational Changes**
- **Engine Overhaul Costs\*(Depot)**
- **Annual Maintenance**
- **Fuel Cost Growth\***
- **Engine-Related Costs\***
- **Investment & Financing Costs**
- **Depot Level Repairable**
- **Manpower Requirements**
- **Secondary & Tertiary Effects**



**\* Must Determine Realistic Projections**

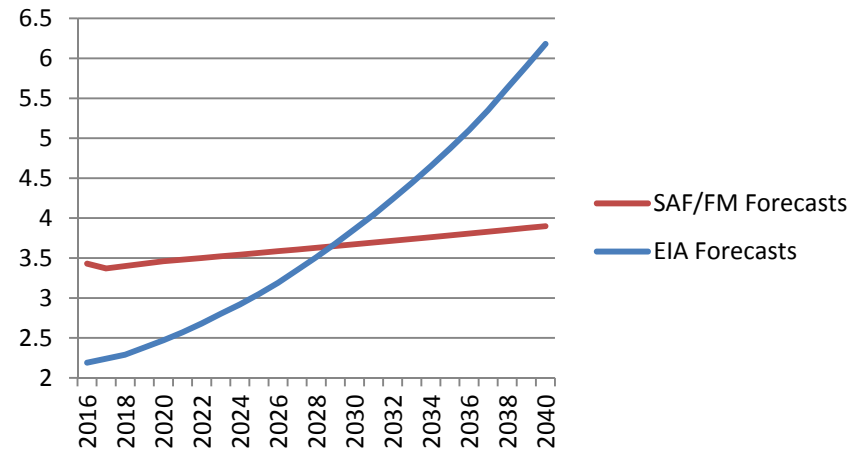
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# Fuel Cost Growth Discrepancies

- Fundamental Difference is how the AF forecasts fuel prices
  - SAF utilizes a flat rate of .06% for out years
  - Energy Information Agency (EIA) predicts Jet Fuel prices to grow at 2.8% over the next 35 years
- AF pays DLA a ‘premium’ over market prices

**Fuel Price Forecasts**



**SAF/FM Forecasting Model**

Fiscal Year	Per Barrel	Per Gallon	% Increase
2016	144.06	3.43	
2017	141.54	3.37	-2%
2018	142.80	3.40	1%
2019	144.06	3.43	1%
2020	145.32	3.46	1%
2021	146.16	3.48	1%

**EIA Forecasting Model**

Fiscal Year	Per Barrel	Per Gallon	% Increase
2016	75	2.19	
2017	81.99	2.24	2%
2018	83.41	2.29	2%
2019	86.58	2.38	4%
2020	89.75	2.47	4%
2021	9.78	2.57	4%



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# B-52 Re-engine Study Comparative Analysis

Year	Author	Re-engine	Increase Efficiency	Tanker REDUX	Overhaul/ DEPOT	Manpower Savings	Notes
1996	Boeing	Y	✓	✓	✓	✓	Re-engine proposal
1997	GAO	N	✓				In Hand
1997	<b>OC-ALC FM, SAF/FM</b>	N	✓				
1998	<b>SAF/AQ</b>						Updated 2002 by ASC/LP
1998	<b>P&amp;W (Not for Public Release)</b>						Updated 2002. May be the same as the SAF/AQ.
2002	<b>Defense Science Board</b>	Y	✓	✓	✓	✓	Updated 2004 in Hand
2003	Boeing <b>(Not for Public Release)</b>						
2004	<b>Oak City Air Logistics Center</b>	N	✓	✓		✓	Summary of 5 documents (2 listed here)
2005	<b>ACSSW</b>	N	✓				Agile Combat Support Systems
2012	Boeing	Y	✓	✓	✓	✓	
2013	Omega	Y	✓	✓	✓	✓	
2014	RAND	Y	✓	✓	✓	✓	
2015	BAH (Incorporated in PEO/FB BCA)	N/C	✓				In Hand (ECD Sept 15)

**Bold:** Info from “Improving the Efficiency of Engines for Large Nonfighter Aircraft”





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## ***Path Forward***

- **OTI to interface with multiple organizations, including SAF/AQP, SAF/IE, PEO FB, AFGSC, SAF/GC, and SAF/FM**
  - **Goal is to establish consensus set of financial and operational assumptions and parameters**
- **AFPEO/FB to complete BCA NLT Sep 2015**
  - **Considering Procurement & ESPC but not commercial leasing**
- **SAF/IE to support CAPE ESPC analysis**
- **OTI to explore leasing and other novel approaches**
- **OTI to develop at least four COAs for senior leader review NLT 31 Dec**